IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicant	:	Klaus Biester	
Filed	:	February 25, 2005	
TC/A.U.	:	3753	
Examiner	:	Rost, Andrew J.	
Title	:	Regulating Device	
Docket No.	:	1600-11400	
Client Ref. No.	:	OTE-030480US	
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Date	:	June 9, 2008	

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

Sir:

The appellant hereby submit this Appeal Brief in connection with the above-identified application. A Notice of Appeal was previously filed on April 9, 2008.

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I. REAL PARTY IN INTEREST

The real party in interest is Cameron International Corporation, a corporation having its principal place of business in Houston, Texas. The Assignment from the inventor to Cooper Cameron Corporation was recorded on September 20, 2005 at Reel/Frame 016556/0575. The Cooper Cameron Corporation is now known as Cameron International Corporation.

II. RELATED APPEALS AND INTERFERENCES

The appellant is unaware of any related appeals or interferences.

III. STATUS OF CLAIMS

This application claims priority to a PCT application. Claims 1-27 remain in this application. Claim 28 was previously canceled. No claims are presently or have previously been withdrawn. Claims 1-27 are presently being appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final Office action dated January 9, 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The various embodiments are related to a regulating device for the linear regulation of an actuating element for operation of a blowout preventer.[1] At least some of the illustrative embodiments are a regulating device as in claim 1, including a housing (14).[2] The device (1) also includes a ball spindle drive (3) within the housing (14) that includes a rotating spindle (15) and a ball nut (13) surrounding the spindle (15).[3] The device (1) also includes a drive train that includes at least one motor (4, 5) and a self-locking, double helical gear (11, 12) including at least one first helically-toothed gearwheel (17) and at least one second helically-toothed gearwheel (18).[4] In the device (1), the at least one motor

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[1] Application Title.

[2] Specification page 7, paragraph [0039]. A shorthand notation for citations to the Specification takes the form ([page], [paragraph]). The citation of this footnote in the shorthand form reads: (7, [0039]). *See also* Fig. 1.

[3] (7, [0039]). *See also* Fig. 1.

[4] (8, [0043] - 9, [0048]). *See also* Fig. 1.

(4, 5) is connected for movement with the at least one second helically-toothed gearwheel (18).[5]

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The examiner rejected claims 1-7, 11, 13-15, 17-23, and 25-27 under 35 U.S.C. § 103(a) as being unpatentable over McCormick et al. (U.S. Patent No. 6,585,246) ("McCormick") in view of Howell (U.S. Patent No. 3,481,215) ("Howell").

The examiner rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over McCormick in view of Howell, and further in view of Waber (U.S. Patent No. 6,095,487).

The examiner rejected claims 9-10 and 24 under 35 U.S.C. § 103(a) as being unpatentable over McCormick in view of Howell, and further in view of Allen (U.S. Patent No. 5,722,304).

The examiner rejected claim 12 under 35 U.S.C. § 103(a) as being unpatentable over McCormick in view of Howell, and further in view of Coppola et al. (U.S. Patent No. 5,743,348).

The examiner rejected claim 16 under 35 U.S.C. § 103(a) as being unpatentable over McCormick in view of Howell, and further in view of Gilges et al. (U.S. Patent No. 5,370,011).

VII. ARGUMENT

A. Claims 1-7, 11, 13-15, 17-23, and 25-27

Claims 1-7, 11, 13-15, 17-23, and 25-28 are not obvious because McCormick specifically teaches away from the suggested modification as being unnecessary, redundant, and wasteful over-engineering. The examiner attempts to justify the modification by citing advantages of preventing overshoot and improved damping characteristics. McCormick, however, teaches that these advantages are not necessary or are already realized. McCormick teaches that the clamp in FIG. 1 is specifically designed to only clamp small items, such as an electronic circuit board. As such, the clamp only uses small clamp arms having low rotational inertia and/or insignificant weight and as such would not cause the clamp to move toward the clamped or unclamped position even though no power is applied. The small arms also do not cause any issues with servomechanism overshoot or imperfect

[5] (8, [0043] - 9, [0048]). *See also* Fig. 1.

damping characteristics. Even if these issues were a concern, the clamp in FIG. 1 already includes a built-in computer that monitors and controls the clamp and provides ample control for correction of any overshoot. Modifying McCormick with a more complex design would only increase the complexity and the cost of manufacturing and servicing the clamp without adding any additional advantages. One of ordinary skill in the art would thus have considered such a modification to be over-engineering and would not have considered the proposed combination obvious.

The modification would also negate the benefits of scalability specifically advocated by McCormick. McCormick teaches away from the examiner's suggested over-engineering by teaching the advantage of scalability with the optional add-on brake shown in FIG. 2 that can be used with the clamp of FIG. 1 when heavier clamp arms are needed. As such, FIG. 2 is a related embodiment to FIG. 1 and must be considered. McCormick teaches away from the examiner's suggestion by teaching the desirability to start with a stock model (as shown in FIG. 1) for light use that may be modified on an as needed basis as shown in FIG. 2. This allows greater flexibility in implementation of the clamp for varying jobs. One of ordinary skill in the art would have considered the ability to scale the clamp to the demands of the particular application beneficial for keeping manufacturing costs down because the stock clamp with the optional brake as an add-on is cheaper to produce than producing two completely different models. Including braking as a built-in, full-time feature into the main gearing system itself would be over-engineering and add cost, not to mention being unnecessary for the applications the clamp in FIG. 1 is designed to perform.

Additionally, McCormick and Howell are not proper references for an obviousness rejection because the references non-analogous to the art of blowout preventer actuation. McCormick is directed to a power clamp for holding objects while Howell is directed to double helical gears. Even further, a power clamp is not analogous to a workpiece machine. The claimed subject matter is directed to an actuator for the linear regulation of an actuating element for use in a blowout preventer. McCormick and Howell are clearly in different fields of endeavor that involve different structures for different purposes. Also, McCormick and Howell are not reasonably pertinent to the problem of blowout preventer actuation because a person of ordinary skill in the art would not reasonably have been motivated to look for or

have expected to solve the problem by considering a reference dealing with an electric clamp. The examiner attempts to ignore this aspect by asserting that "intended use" is not pertinent to differentiate a claimed apparatus from prior art. However, the examiner is misapplying the standard for differentiating a reference to the standard of whether the reference should be considered in the first place. The proper obviousness analysis requires the cited art to be in the applicant's in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned before the art is to be considered at all. Thus it would not be obvious to combine McCormick and Howell to teach the claimed invention because the references are non-analogous to the art of blowout preventer actuation.

For at least these reasons, claims 1-7, 11, 13-15, 17-23, and 25-27 are not obvious over the proposed combination of McCormick and Howell and the rejection should be withdrawn.

B. Claim 8

Claim 8 depends indirectly from allowable claim 1. The applicant incorporates the remarks made above regarding allowable claim 1. For at least these reasons, claim 8 is also allowable over the cited references and the rejection should be withdrawn.

C. Claims 9-10 and 24

Claims 9-10 and 24 depend either directly or indirectly from allowable claim 1. The applicant incorporates the remarks made above regarding allowable claim 1. For at least these reasons, claims 9-10 and 24 are also allowable over the cited references and the rejection should be withdrawn.

D. Claim 12

Claim 12 depends directly from allowable claim 1. The applicant incorporates the remarks made above regarding allowable claim 1. For at least these reasons, claim 12 is also allowable over the cited references and the rejection should be withdrawn.

E. Claim 16

Claim 16 depends indirectly from allowable claim 1. The applicant incorporates the remarks made above regarding allowable claim 1. For at least these reasons, claim 16 is also allowable over the cited references and the rejection should be withdrawn.

VIII. CONCLUSION

For the reasons stated above, the appellant respectfully submits that the rejections should be withdrawn. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Cameron International Deposit Account No. 03-0335.

Respectfully submitted,
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IX. CLAIMS APPENDIX

1. (previously presented) Regulating device for the linear regulation of an actuating element for operation of a blowout preventer comprising:

a housing;

a ball spindle drive within the housing comprising:

a rotating spindle; and

a ball nut surrounding the spindle; and

a drive train comprising:

at least one motor;

a self-locking, double helical gear comprising at least one first helically-toothed gearwheel and at least one second helically-toothed gearwheel; and

whereby the at least one motor is connected for movement with the at least one second helically-toothed gearwheel.

2. (previously presented) Regulating device according to claim 1, characterized in that the ball nut of the ball spindle drive is supported rotationally, but is axially immovable in the housing and the rotating spindle is connected for movement to the actuating element.

3. (previously presented) Regulating device according to claim 2, characterized in that the rotating spindle and the actuating element are arranged one behind the other in the axial direction.

4. (previously presented) Regulating device according to claim 2, characterized in that the ball nut is connected to the first helically-toothed gearwheel and the at least one motor to the at least one second helically-toothed gearwheel of the self-locking, double helical gear.

5. (previously presented) Regulating device according to claim 1, characterized in that the at least one motor is an electric motor.

6. (previously presented) Regulating device according to claim 1, further comprising two motors, each driving a second helically-toothed gearwheel, both second-helically-toothed gearwheels engaging the first round helically-toothed gearwheel.

7. (previously presented) Regulating device according to claim 6, the drive train further comprising drive shafts driven by the motors and extending parallel to one another.

8. (previously presented) Regulating device according to claim 7, further comprising at least two motors are arranged on each drive shaft.

9. (previously presented) Regulating device according to claim 1, the drive train further comprising a reduction gear arranged between the at least one motor and the at least one second round helically-toothed gearwheel.

10. (previously presented) Regulating device according to claim 9, the drive train further comprising:

a harmonic drive comprising a flexible, cup-shaped toothed sleeve; and

a drive shaft driven by the at least one motor and connected for movement with the flexible, cup-shaped toothed sleeve.

11. (previously presented) Regulating device according to claim 1, characterized in that a diagonal angle of the helical gearing of the at least one first and/or the at least one second helically-toothed gearwheel is in the range from 50 to 90°.

12. (previously presented) Regulating device according to one claim 1, characterized in that the double helical gear has a transmission ratio lower than 25.

13. (previously presented) Regulating device according to claim 1, wherein the housing can be flange-mounted on a control mechanism.

14. (previously presented) Regulating device according to claim 1, the housing comprising a first and second housing half with the at least one motor and the ball spindle drive located in the first housing half.

15. (previously presented) Regulating device according to claim 1, further comprising an intermediate cover arranged within the housing for at least single-ended support of the at least one second helically-toothed gearwheel.

16. (previously presented) Regulating device according to claim 15, further comprising a position sensor arranged on the intermediate cover and capable of the acquisition of the position of the rotating spindle and/or the ball nut.

17. (previously presented) Regulating device according to claim 2, characterized in that the at least one first helically-toothed gearwheel is releasably mounted on an end of the ball nut facing away from the actuating element.

18. (previously presented) Regulating device according to claim 2, the ball spindle drive further comprising an intermediate ring attached externally onto the ball nut between the ball nut and the at least one first helically-toothed gearwheel.

19. (previously presented) Regulating device according to claim 2, the ball spindle drive further comprising pivot bearings and a retention ring releasably mounted in the housing, the pivot bearings and retention ring holding the ball nut immovable in the axial direction.

20. (previously presented) Regulating device according to claim 2, characterized in that the actuating element and/or the rotating spindle are supported rotationally rigidly in the housing using a splined shaft.

21. (previously presented) Regulating device according to claim 6, characterized in that the electric motors are synchronized.

22. (previously presented) Regulating device according to claim 1, characterized in that the first and second helically-toothed gearwheels exhibit 1 to 10 teeth.

23. (previously presented) Regulating device according to claim 7, characterized in that the drive shafts are synchronised in their rotational movements using a mechanical coupling device.

24. (previously presented) Regulating device according to claim 9 wherein the reduction gear is a harmonic drive.

25. (previously presented) Regulating device according to claim 22 wherein the first and second helically-toothed gearwheels have 1 to 7 teeth.

26. (previously presented) Regulating device according to claim 22 wherein the first and second helically-toothed gearwheels have 1 to 4 teeth.

27. (previously presented) Regulating device according to claim 1, characterized in that a diagonal angle of the helical gearing of the at least one first and/or the at least one second helically-toothed gearwheel is in the range from 65 to 85°.

28. (canceled)

X. EVIDENCE APPENDIX

None.

XI. RELATED PROCEEDINGS APPENDIX

None.